NSW SCIENTIFIC COMMITTEE

Final Determination

The Scientific Committee, established by the *Threatened Species Conservation Act 1995* (the Act), has made a Final Determination to list the Dural Land Snail *Pommerhelix duralensis* (Cox, 1868) as an ENDANGERED SPECIES in Part 1 of Schedule 1 of the Act. Listing of Endangered species is provided for by Part 2 of the Act.

The Scientific Committee has found that:

1. *Pommerhelix duralensis* (Cox, 1868) (family Camaenidae), known as the Dural Land Snail or the Dural Woodland Snail (Stanisic *et al.* 2010), was described by Cox (1868) as "Shell umbilicated, depressly-turbinate, rather solid, roughly ribbed, especially at the suture, very minutely granulated, dark chestnut, somewhat lighter below; spire short, obtuse; whorls 5, gradually increasing in size, rather convex, the last keeled, rounded in front, a little descending; aperture diagonal, rotundately-lunar, pale rose-colour; peristome simple, straight, very thinly reflexed, columellar margin dilated above, and ½ covering the umbilicus." In addition, "Shell subglobose, 10.6–23.0 mm in height, 14.7–23.5 mm in width. Spire moderately elevated. Last teleoconch whorl rounded with weak to strong angulation. Shell dark brown to black. Vagina short to long." (Clark 2009).

2. The Dural Land Snail was originally named *Helix duralensis* by Cox (1868) and was later transferred to the genus *Thersites* Pfeiffer by Pilsbry (1894) and then to *Meridolum* by Iredale (1942). The genus *Meridolum* was subsequently split into five genera following analysis by Clark (2005) and *H. duralensis* was formally transferred to the new genus *Pommerhelix* by Clark (2009). The Dural Land Snail superficially resembles the related species *Meridolum corneovirens* (Pfeiffer), with which the Dural Land Snail is parapatric (Clark 2009).

3. The Dural Land Snail has a strong preference for shale-influenced transitional landscapes (Ridgeway *et al.* 2014) and its presence has not been confirmed outside such habitats. The species inhabits dry habitats but no specific behaviours associated with such habitats have been reported (Ridgeway *et al.* 2014) although individuals rest during the day and actively forage at night. The species is typically active from approximately one hour after dusk until dawn. No confirmed diurnal activity has been reported. In contrast to related species, the Dural Land Snail neither burrows nor climbs. The species has been observed resting in exposed areas, such as on rock or leaf litter, however it will also shelter beneath leaves, rocks and light woody debris. The species occasionally aestivates (enters a state of dormancy) by secreting an epiphragm (a structure which seals the shell entrance to protect against desiccation) (Ridgeway *et al*. 2014). Ridgeway *et al.* (2014) notes that the species exists in very low densities (~three snails per ha). Intensive searching conducted by Ridgeway *et al.* (2014) (45 person hours over three nights) discovered just three live snails. The species' movement is extremely slow. Ridgeway *et al*. (2014) observed the maximum nightly straight-line distance travelled was 0.96 m over 16 survey-animal-nights and a maximum of 3.5 m in 24 hours. The Dural Land Snail does not exhibit 'roost-site' behaviour and recorded travel is randomly orientated (TSSC 2015). The Dural Land Snail was observed actively feeding on a native fungus *Polyporus mylittae* by Ridgeway *et al.* (2014) and they also reported a single instance of an individual at East Kurrajong grazing on algal growth on the scat of a macropod. Feeding trials *ex situ* were conducted and various snails fed on fungus, lichen, detritus and leaves, although Ridgeway *et al.* (2014) expressed caution in extrapolating such results to the behaviour of the species in the field.

4. The Dural Land Snail is endemic to New South Wales (NSW) and has been recorded on the northwest fringes of the Cumberland Plain. The species distribution extends as far north as St Albans (95 km northwest of Sydney, near Yengo National Park), southwest to Mulgoa (66 km west of Sydney in the

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footslopes of the Blue Mountains) and southeast to Parramatta. The majority of records occur around the towns of Wisemans Ferry, Maraylya, Glenorie and Dural.

5. The distribution of the Dural Land Snail is considered to be highly restricted. Using the recorded occurrences of the species listed in Clarke (2009) the Dural Land Snail occupies an extent of occurrence (EOO) of 1,970 km^2 based on a minimum convex polygon enclosing all mapped occurrences of the species, the method of assessment recommended by IUCN (2014). The area of occupancy (AOO) is 168 km^2 based on 2 x 2 km grid cells, the scale recommended for assessing AOO by IUCN (2014) (TSSC 2015). The Commonwealth Threatened Species Scientific Committee (TSSC 2015) estimated the Dural Land Snail to have an EOO of approximately 2,400 km^2. This was calculated by connecting all confirmed records, including a buffer of 5 km. An AOO of approximately 638 km^2 was calculated by mapping the shale-influenced habitat within the species' known range (as this habitat type determines the species distribution). As a result of ongoing land clearing in the region it is suspected that the actual AOO would be smaller than this (TSSC 2015).

6. The Dural Land Snail occurs on both public and private land. The species has been recorded in a number of conservation reserves including: Blue Mountains National Park, Cattai National Park, Marramarra National Park, Yengo National Park, Berowra Valley National Park, Parr State Conservation Area and Yellomundee Regional Park.

7. The Dural Land Snail is found within the following NSW threatened ecological communities and equivalent *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) listed communities (TSSC 2015):

Ecological Community	**NSW TSC Act**
*Blue Gum High Forest of the Sydney Basin Bioregion	Critically Endangered
*Cumberland Plain Woodland in the Sydney Basin Bioregion	Critically Endangered
*Sydney Turpentine-Ironbark Forest in the Sydney Basin Bioregion	Endangered
*Shale/Sandstone Transition Forest in the Sydney Basin Bioregion	Critically Endangered

*Communities with an asterisk are also listed under the EPBC Act.

The species is also found within Turpentine Ironbark Margin Forest, Hinterland Sandstone Gully Forest and Sydney Hinterland Transition Woodland (TSSC 2015).

8. Loss of habitat due to land clearing for agricultural and urban development is an historic and ongoing threat to the Dural Land Snail. Suitable habitat and known populations of the species have been destroyed through past land clearance (TSSC 2015). Within the species' core range (The Hills local government area) aerial surveillance comparisons between 2005 and 2006 determined an average annual vegetation clearance of between 1.8% and 3% (TSSC 2015). Hornsby local government area contains approximately a quarter of the remaining area of two Critically Endangered ecological communities in which the species is known to occur, Blue Gum High Forest and Sydney Turpentine-Ironbark Forest of the Sydney Basin Bioregion. Although 89% of these communities occur on private land, a number of Council reserves contain these communities (TSSC 2015). A study into the clearance of shale vegetation in the region, undertaken over 26 months between January 2005 and March 2007, found that Sydney Turpentine-Ironbark Forest had been reduced by 1.2 ha and Blue Gum High Forest had been reduced by 0.6 ha (Smith and Smith 2008). More recent assessments indicate a higher rate of clearing has occurred in the urban areas (TSSC 2015). 'Clearing of native vegetation' is listed as a Key Threatening Process under the Act.

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9. Habitat fragmentation is also a serious threat to the Dural Land Snail. Due to historic and ongoing clearing, the Dural Land Snail's habitat is now severely fragmented. A number of populations are now isolated into remnants under 5 ha. Almost all links between the species' shale transition habitat and the adjoining Cumberland Plain have been lost through land clearance (TSSC 2015). Habitat breaks which are smaller than those traditionally considered to be a problem, such as bike trails, can also result in habitat fragmentation for this species (Ridgeway *et al*. 2014). Given its habitat is highly fragmented and the species occurs at very low densities and has low dispersal capacity, the genetic viability of Dural Land Snail populations is of concern. The species may suffer from genetic isolation and inbreeding depression as a result of habitat fragmentation (Clark 2005, Ridgeway *et al*. 2014).

10. Fire is another potential threat to the Dural Land Snail since the snails do not seek shelter but aestivate above the leaf litter during the day (Ridgeway *et al.* 2014). Clark (2005) suggested that fire causes extinction of local populations. Their low dispersal ability may increase their susceptibility to fire and limit their ability to recolonise.

11. *Pommerhelix duralensis* (Cox, 1868) is listed as an Endangered species under the *EPBC Act 1999*.

12. *Pommerhelix duralensis* (Cox, 1868) is not eligible to be listed as a Critically Endangered species.

13. *Pommerhelix duralensis* (Cox, 1868) is eligible to be listed as an Endangered species as, in the opinion of the Scientific Committee, it is facing a very high risk of extinction in New South Wales in the immediate future as determined in accordance with the following criteria as prescribed by the *Threatened Species Conservation Regulation 2010*:

Clause 7 Restricted geographic distribution and other conditions
The geographic distribution of the species is estimated or inferred to be:
(b) highly restricted,
and:
(d) a projected or continuing decline is observed, estimated or inferred in either of the key indicators:
(a) an index of abundance appropriate to the taxon, or
(b) the geographic distribution, habitat quality or diversity, or genetic diversity of the species.

Dr Mark Eldridge
Chairperson
Scientific Committee

Exhibition period: 16/12/16 – 10/02/17 Proposed Gazettal date: 16/12/16

References:

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